

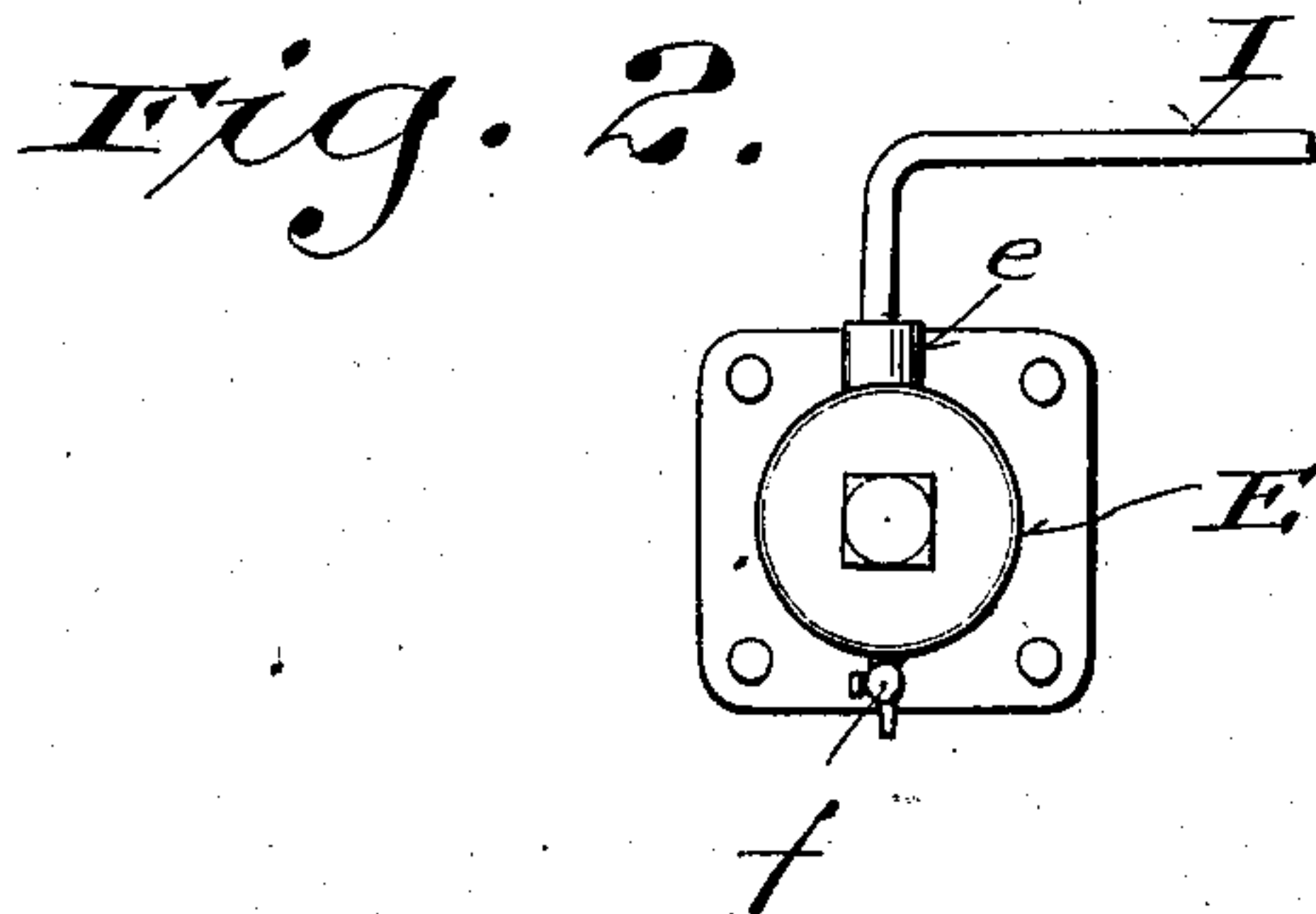
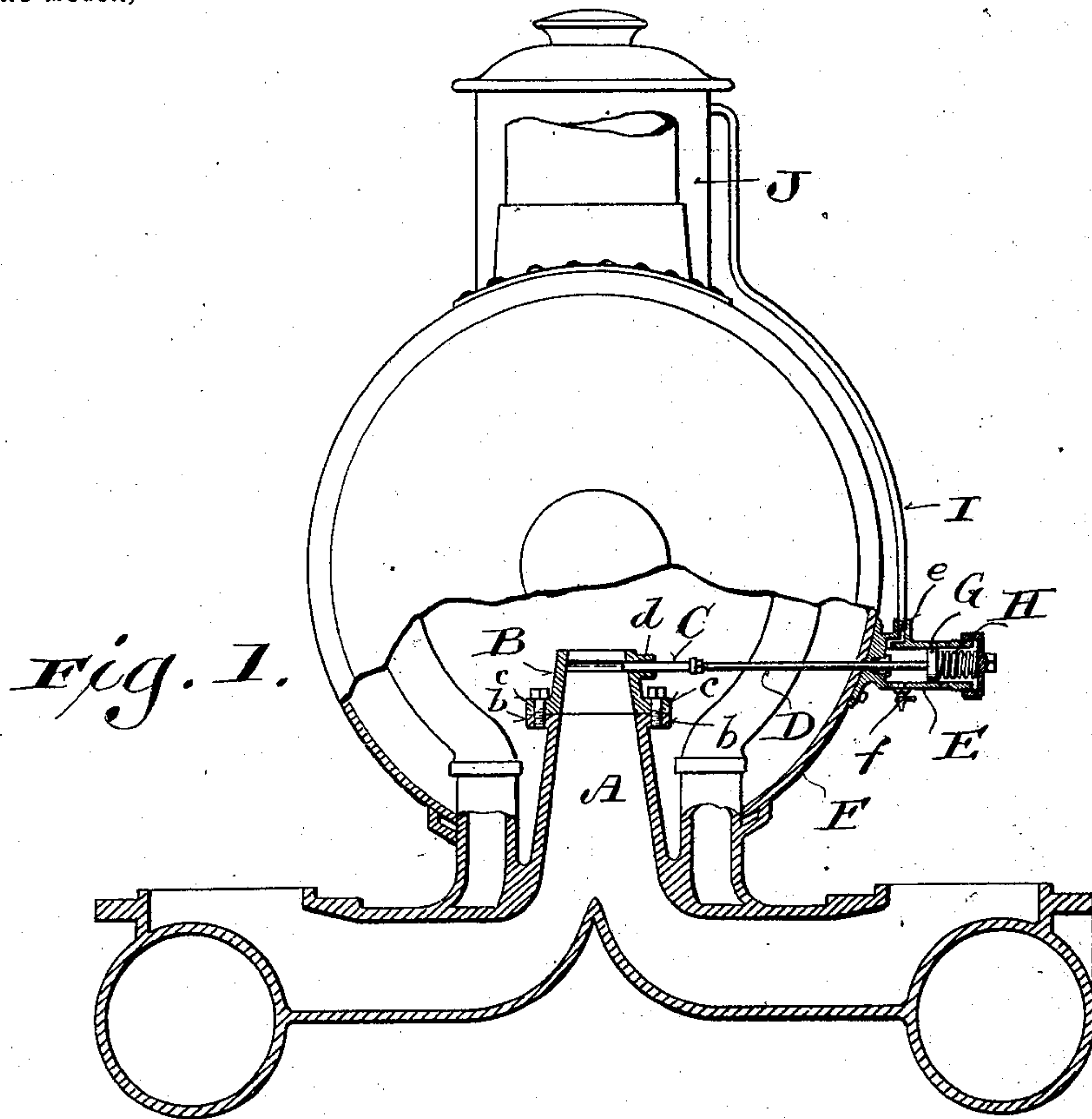
No. 693,437.

Patented Feb. 18, 1902.

C. T. PFEIFFER.
AUTOMATIC DRAFT CONTROLLER.

(Application filed Jan. 10, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES T. PFEIFFER, OF MILWAUKEE, WISCONSIN.

AUTOMATIC DRAFT-CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 693,437, dated February 18, 1902.

Application filed January 10, 1901. Serial No. 42,721. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. PFEIFFER, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Automatic Draft-Controllers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide for automatic control of the outlet area of nozzles through which exhaust-steam has passage to create draft in a boiler-furnace, it being desirable to partially close such a nozzle, and thereby increase the draft when there is diminution of the boiler-pressure of steam from a predetermined degree, said invention being particularly applicable in conjunction with locomotive exhaust-nozzles and consisting in certain peculiarities of construction and combination of parts hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents a front elevation of a portion of a locomotive partly in section and provided with means in accordance with my invention by which to partially close its exhaust-nozzle when there is a diminution of the boiler-pressure of steam from a predetermined degree; and Fig. 2, a detail elevation of a cylinder and steam-pipe in connection therewith, these parts being embodied in the means aforesaid for accomplishing the object of said invention.

Referring by letter to the drawings, A indicates the ordinary conical exhaust-nozzle of a locomotive, with the exception that it is herein shown provided with upper diametrically opposite ears *b*, to which are bolted corresponding lower ears *c* of a conical shell B, that constitutes a detachable extension of said nozzle, this shell being interiorly grooved to provide guideways for a horizontal gate C, that is also guided in a slotted outer boss *d* of said shell. A rod D in union with the gate C extends through a stuffing-box in a head of a cylinder E, herein shown made fast to the smoke-box shell F of the locomotive. Within the cylinder is a piston G in union with the rod D, and a spiral spring H of suitable power is arranged in said cylinder to be compressed by forward thrust of the piston.

A pipe I is herein shown as having one end thereof in connection with the steam-dome J of the locomotive, its other end being in

union with a port-nipple *e* of cylinder E; but the former end of the pipe may be fitted to the locomotive-boiler, and in either case steam is admitted to said cylinder back of piston G at boiler-pressure. In order to drain water of condensation from the cylinder E, the same is provided with a waste-cock *f* of common knowledge.

When there is steam-pressure of a predetermined degree back of piston G, the latter will be moved outward to compress spring H and at the same time retract the gate C, the exhaust-nozzle being then wide open. Now if there be diminution of the steam-pressure from the predetermined degree the spring H will expand, and thus cause automatic inward movement of gate C to contract the outlet area of the exhaust-nozzle, and thus increase the draft through said nozzle, the proportions and range of movement on the part of said gate being such that the outlet of the aforesaid nozzle is never entirely closed.

While I have shown the parts A and B combined to form a two-section exhaust-nozzle, it is to be understood that it is entirely practical to utilize a one-piece nozzle provided with a gate similar to the one C herein set forth in connection with the rod of a piston arranged in a cylinder to be moved in one direction by steam-pressure and in the opposite direction by expansive force of a spring.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of a steam exhaust-nozzle, a horizontal slide-gate arranged in conjunction with the nozzle to govern its outlet area, a cylinder arranged and connected to be supplied with steam at boiler-pressure, a piston in the cylinder ahead of its steam-inlet, a rod connecting the gate and piston through a stuffing-box in a cylinder-head, and a spring between the piston and other cylinder-head compressible under a predetermined degree of steam-pressure exerted on said piston.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

CHARLES T. PFEIFFER.

Witnesses:

N. E. OLIPHANT,
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